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Review of Light Infantry Doctrine

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This document represents a current literature review of light infantry doctrine. It is an essential step in our current research effort to identify light infantry training and doctrine shortcomings, prioritize research issues, and develop research solutions to light infantry training and doctrine problems.

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REVIEW OF LIGHT INFANTRY DOCTRINE

CONTENTS

CONTENTS (Continued)

List of Figures

REVIEW OF LIGHT INFANTRY DOCTRINE

This report represents contract deliverable 0002AT of a current contract between the Army Research Institute (ARI) Fort Benning Field Unit and Litton Computer Services (MDA 903-88-C-0407).

The purpose of this document is to present a current review of light infantry (LI) doctrine which will serve as a start point to identify training shortcomings and future research issues. These research issues will ultimately produce research products that will improve soldier performance and enhance LI force readiness. The scope of this review is limited to LI doctrine and does not cover regular infantry (both mechanized and armored) doctrine. Where appropriate, comparisons will be made between LI units and mechanized units to improve understanding of LI doctrine.

Background and Overview of Light Infantry

The LI concept was formally adopted by the U.S. Army in 1984 with the presentation of a white paper by then Chief of Staff, John A. Wickham, Jr., on the Light Infantry Division, Army of Excellence. This white paper outlined the formation of a 10,000(+) man force that would be deployable worldwide three times faster than any existing infantry division using less than 500 C141 aircraft sorties.

Naturally, this development created a need for doctrine to guide training and employment of the LI divisions. Before LI-specific doctrine was developed, field manuals that dealt with Infantry, Airborne, and Air Assault units were used, e.g., FM 7-8 (1984), The Infantry Platoon and Squad [Infantry, Airborne, Air Assault, Ranger]; FM 7-10 (1982), The Infantry Rifle Company [Infantry, Airborne, Air Assault, Ranger]; and FM 7-20 (1984), The Infantry Battalion [Infantry, Airborne, Air Assault].

Beginning in September 1986, the 7-70 series of Light Infantry FMs was released. The 7-70 series includes FM 7-70 (1986), Light Infantry Platoon/Squad; FM 7-71 (1987), Light Infantry Company; and FM 7-72 (1987), Light Infantry Battalion. These manuals represent the most current embodiment of LI doctrine and serve as the primary source of information for this review.

LI units differ from other units structurally and tactically. They are organized and constructed to be deployed quickly, world-wide, in close restricted terrain, in low- to mid-intensity conflicts. They are designed to sustain operations for 48 hours before requiring external logistical support. LI units are especially suited to fight on urban terrain and to use bad weather and night operations to their advantage. They are basically foot-mobile and use multiple, small-unit tactics; however, they have the ability to integrate with heavier forces operating in restricted terrain.

Mechanized and armored units have more firepower and are much more mobile. Soldiers are deployed in personnel carriers and tanks. Mechanized units are designed to conduct sustained operations for longer periods of time, make rapid, deep penetrations, and conduct offensive and defensive operations

over large areas. They cannot be deployed world-wide as quickly as LI units because they require substantial quantities of heavy equipment and supplies. They are limited by restricted terrain such as dense jungles, forests, mountains, and water obstacles. This fact points to the importance of heavy/light force integration in the Air Land Battle concept.

The differences in mobility and combat service support (CSS) assets between LI and mechanized units are important: LI units have fewer vehicles than mechanized units, thus limiting their abilities to move soldiers and supplies. This is an important concern that should be remembered when interpreting and comparing LI doctrine to other infantry doctrine.

In addition, it is important to recognize battalion-level organization and the battalion's role on the battlefield. At division level, the commander orchestrates the smooth coordination of the seven battlefield operating systems (BOS), which are maneuver, fire support, intelligence, mobility and survivability, air defense, combat service support, and command and control. At brigade level, command concerns are less global and center primarily on the maneuver and command and control systems or functions.

It is at battalion level that doctrine is implemented (i.e., deploying and directing troops and equipment in coordinated maneuvers to destroy enemy forces directly). Current doctrine describes battalions as having the capability of engaging in small-unit independent operations at considerable distances from command and control headquarters and that the battalion is "the (light) division's close combat maneuver force" (FM 7-72 (1987), p. 1-5).

Division- and brigade-level activities are critical to battalion operations. The emphasis of doctrine within infantry organizations is at battalion level and below because the battalion element can be attached easily to other forces within brigades and divisions.

Consequently, the focus of this review is upon battalion-level operations to illustrate LI doctrine. When necessary, points are made about LI doctrine not limited to battalion-level operations. Doctrinal emphasis on different tactics and techniques for different levels of organization are discussed throughout the review. The review begins with a discussion of the organization of light infantry units and terminology. Then, LI doctrine is presented, followed by a discussion of infantry issues that impact on light infantry and the emerging research effort.

Organization of the Light Infantry Division

A LI division is composed of a headquarters and headquarters company (HHC), three LI brigades, a combat aviation brigade, a division artillery command, and a support command (See Figure 1). The division headquarters contains the following types of battalions: signal, military intelligence, air defense artillery, engineer, company band, and military police.

The division combat aviation brigade contains two aviation companies, one attack battalion, and one reconnaissance battalion. The division

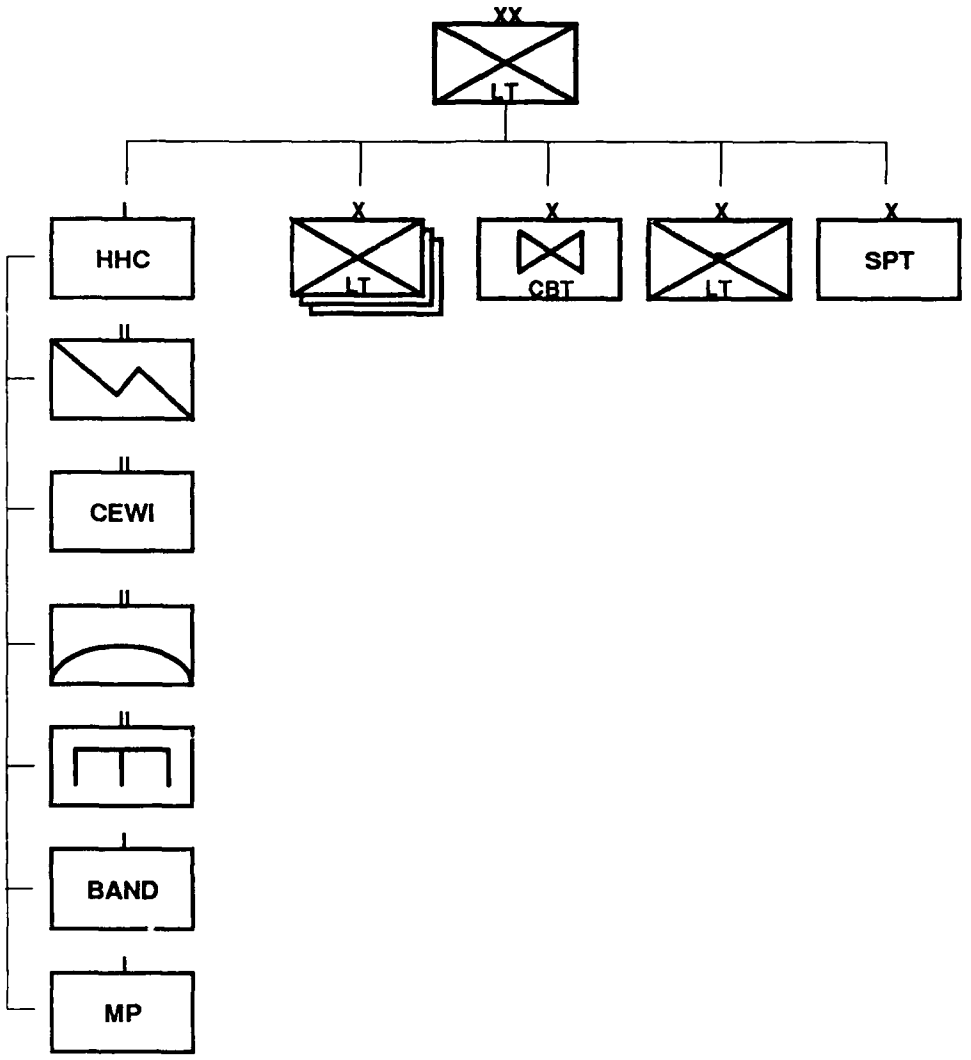

Figure 1. Division organization.

artillery command contains three field artillery battalions. Rounding out the division is the division support command which contains four battalions: medical, supply and transportation, maintenance, and an aviation maintenance company.

The LI battalion is organized to provide command and control (C2), combat support (CS), and combat service support (CSS) for its three rifle companies. The battalion consists of a headquarters and headquarters company (HHC) and three rifle companies. The HHQ provides CS in the form of scout, mortar, and antiarmor platoons. It also provides CSS via the support and medical platoons (See Figure 2).

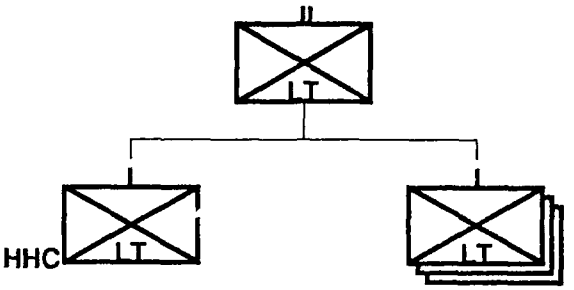

Figure 2. Battalion organization.

The rifle company is the main combat element within the battalion (FM 7-72 (1987), p. 1-16) and consists of a headquarters platoon and three rifle platoons. There are no vehicles in the rifle company (FM 7-71 (1987), p. 1-1). The headquarters platoon contains three sections: headquarters, antiarmor (medium), and light weight company mortar (LWCM) (two M224, 60-mm mortars). The headquarters section includes the platoon leader, the platoon sergeant, two M60 machine gun teams of two men each, and one radiotelephone operator (RATELO). The rifle squad is a 9-man team organized into two 4-man teams and a squad leader. Rifle squads can operate independently or as two teams (see Figure 3).

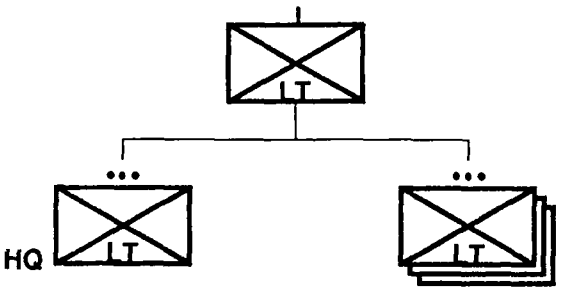

Figure 3. Company organization.

Before presenting and discussing LI doctrine, there are several key terms which should be defined in order to avoid confusion. A clear understanding of what these terms mean and their interrelationships are essential for understanding LI doctrine.

Doctrine - the body of basic principles by which the U.S. Army fights (FM 7-71 (1987), p. 2-4). This includes all officially approved operations, tactics, procedures, and techniques. The utilization of doctrine requires judgment and therefore does not equate with dogma. Doctrine rarely changes

and does so very slowly. Examples of such principles include the Principles of War (FM 100-5 (1987)) and the AirLand Battle Imperatives (FM 100-5 (1987), p. 22). Doctrine provides a common language and helps to focus training efforts. However, specific doctrine is not standard for every organization in the Army and varies across different types and levels of organization.

Mission - the primary task assigned to an individual, unit, or force (FM 7-72 (1987), FM 101-5-1 (1985)). It is an order from a particular commander to a subordinate, and it specifies who, what, when, where, and why, but seldom how. Each mission is different because it is based on a METT-T (mission, enemy, terrain [and weather], troops, and time available) analysis of the mission environment (FM 100-5 (1987), pp. 120-122).

Operations - a group of similar missions (FM 7-71 (1987); FM 7-72 (1987)). An operation is the military action involved in accomplishing a mission. Operations may be broadly classified as offensive, defensive, joint, combined, or contingency and each has its own associated definitions, characteristics, and principles (FM 101-5-1 (1985)). While these operations are standard throughout the Army, the execution of operations through various tactics, techniques, and procedures depends upon the situation (mission).

Tactics - are ideal ways of using a unit(s) to accomplish a specific task(s) (FM 7-71 (1987), p. 2-4). This includes, but is not limited to, the placement and movement of forces in battle to gain an advantage; the use of firepower to aid and exploit the advantage; and the protection and care of forces before, during, and after the engagement (FM 7-72 (1987), p. 2-14). Tactics also vary according to mission.

Techniques - are detailed methods for accomplishing a task (FM 7-71 (1987)). Techniques should enhance tactics and ensure that soldiers from various units can work well with other soldiers from other units (FM 7-72 (1987)). Although techniques are not standard throughout the Army, they should be.

Procedures - are standard and detailed courses of action that describe how to perform a certain task (FM 7-71 (1987)), such as passage of lines or relief in place. Procedures deal with task level performance and represent the lowest level of detail addressed by LI doctrine (FM 7-72 (1987), p. 2-15).

LI doctrine is presented in the FM 7-70 series through discussion of command and control, general offensive operations, general defensive and retrograde operations, combat support, and combat service support, with discussion of specific topics such as heavy/light integration as needed. The format of this report follows this same outline because the 7-70 series of field manuals represents the LI doctrine used by LI commanders and soldiers. Imposing a different level of organization upon this information might obscure how the doctrine is presented in these field manuals. This does not mean however that we believe this manner of organization or presentation is best. In fact, we will comment on the current organizational approach as a follow-up to our discussion of LI doctrine.

Command and Control C2

Command and control is a term used to describe actions taken by leaders to ensure that decisions are made and carried out. It is a system whereby commanders gather information, determine the best decision, make plans, issue orders, and supervise the execution of those orders. The goal of the process is assurance that the unit is functioning in a coordinated manner to accomplish its mission.

Command specifically represents the exercise of authority and direction by the commander over his force (FM 7-71 (1987); FM 7-72 (1987)). It represents the will of the commander and the intent of the operations, thus providing decision and direction for the unit. Control specifically refers to monitoring the response to the decision to minimize deviation from the commander's direction. In effect, control provides supervision to focus combat power and synchronize functioning of all systems. The command and control system requires the coordination of several elements: command philosophy, staff organization, the C2 process, and facilities.

Command Philosophy

The term command philosophy encompasses four concepts: command presence, mission orders, intent, and initiative. The commander must establish a command presence to instill confidence, a common vision of the battle, and trust in his or her subordinates. Command presence is not easily defined and takes time to establish through close interaction with subordinates in a variety of training situations. Its establishment influences the other components of philosophy in the following manner: Mission orders communicate what the commander wants done, not how it is to be done. Mission orders thus result in directive control and the communication of the commander's intent (the end result desired at the completion of the current mission).

In order to accomplish the mission, subordinates must feel confident enough to use the mission order and the commander's intent to take the initiative in performing tasks necessary to accomplish the mission. A common philosophy therefore fosters flexibility within the system that results in an increase in operational efficiency and appropriate and coordinated functioning of subordinates in the absence of orders (FM 7-71 (1987); FM 7-72 (1987)).

Organization of Staff

Organization of staff is a critical, though straightforward, component of the command and control system. The commander's staff, at any level, is designed to carry out the command and control process within the organization. The staff exists to gather information, estimate, anticipate, inform, recommend, order, and supervise. Even though authority is delegated, the ultimate responsibility of the staff remains with the commander (FM 7-72 (1987)).

C2 Process

The command and control process is the component of the C2 system that describes the actions taken by commanders and subordinates to accomplish their missions (FM 7-72 (1987)). The process involves planning, the military decision making process, and troop leading procedures.

Planning, the first step in the process, is based on the primary concern of accomplishing the mission. Before any orders are issued, the commander must analyze the mission in terms of METT-T, commander's intent, applicable doctrine, and the main effort that will be directed against enemy forces. Many of the "how-to" decisions (e.g., which tactics, techniques, and procedures are appropriate) are heavily influenced by this planning phase (FM 7-72 (1987); FM 101-5-1 (1985)).

The command and control process utilizes the military decision making process. The following steps (outlined in FM 7-72 (1987)) describe how this process begins. When the mission is received an information flow starts between the commander and staff. The commander uses all available information to analyze the mission, conduct the initial planning phase, and offer further guidance to staff. The staff uses information from the commander to produce better estimates of such things as expected enemy actions, personnel, intelligence, logistics, and several other types of resources that might impact upon the commander's decision. The commander then incorporates this information to produce a best estimate of the situation and a concept of what should be done. The staff then receives this input from the commander and produces plans/orders which are subsequently reviewed by the commander, revised if necessary, and issued as mission orders. Both staff and commander are responsible for supervising the execution of the orders and utilizing feedback to improve the staff's and commander's initial estimates of the situation and what should be done. This description is of an ideal situation. During combat, factors such as time available and developments on the battlefield often lead to fewer exchanges between commander and staff and more verbal than written exchanges of information.

The military decision making process is more specifically translated into the troopleading procedure. This procedure contains eight steps (FM 7-72 (1987)):

1) Receive the mission and conduct a mission analysis to define clearly what is to be done, the commander's intent, and any limitations that apply.

2) Issue the warning order which provides planning guidance to the staff.

3) Make a tentative plan which includes the command/staff estimates described earlier.

4) Initiate movement.

5) Reconnoiter.

6) Complete the plan which includes staff recommendations, the commander's concept, the initial preparation of orders, and the commander's approval.

7) Issue the operation orders (OPORDs) which include the essential information that subordinates need to issue their own orders and effect coordination.

8) Supervise and refine.

C2 Facilities

The final component of the C2 system is facilities. Facilities refer to the physical location of leaders and subordinates who process and transmit the information necessary for the command and control system to function properly (FM 7-71 (1987), FM 7-72 (1987)). These locations are referred to as C2 operation centers. For example, at the battalion level, the C2 operations centers include the admin-log center in the brigade support area, the main battalion tactical operation center (TOC), the tactical command post (TAC), and combat trains (these play a major role in CSS and are discussed later) (FM 7-72 (1987)).

At the TOC are the executive officer (XO), representatives of the coordinating staff (e.g., S1 - S5), special staff officers (e.g., signal, tactical intelligence, assistant S3, chemical, etc.,), tactical air control party (TACP), fire support element (FSE), air and naval gunfire liaison company (ANGLICO), and security personnel (FM 7-72 (1987), p. 2-26). The TOC is a planning and monitoring headquarters where logistical and operational decisions are made by the XO (FM 7-72 (1987)).

The TAC is the commander's mobile command post and is located in the most appropriate position for the commander to command and control the battle. The make up of this group varies depending upon the situation. Usually it consists of the commander, S3, fire support officer, air liaison officer, and if attached, ANGLICO. In the LI battalion, this command post is highly mobile; usually the members of the command post operate on foot, and by necessity close enough to monitor the battle as it develops and progresses. There is also an alternate command post which is commonly located near the battalion mortar platoon or in the admin-log center in the combat trains to ensure continuous command and control operations (FM 7-72 (1987)).

To summarize, the command and control system can be thought of as a network of communication between leaders and subordinates established to process information before, during, and after the battle. Command and control is a complicated process that pervades each of the remaining topics of LI doctrine yet to be presented, including the next topic, general offensive operations.

General Offensive Operations

The fundamental purpose of an offensive operation is to defeat the enemy's fighting force. As FM 100-5 (1987) points out, "the offensive is the decisive form of war" (p. 91), and all successful offensive operations are characterized by surprise, concentration, speed, flexibility, and audacity. Even though LI forces possess the capability to conduct offensive operations under a variety of circumstances, current doctrine supports using the cover of darkness, bad weather, and restricted terrain to gain full advantage. In fact, FM 7-72 states that "night combat is the cornerstone of LI battalion operations," which means a daylight attack would be rare.

To describe the general offensive operations conducted by the light infantry, doctrine specifies five basic forms of maneuver, five types of offensive operations, five techniques that may be used, and six special purpose offensive operations for LI units (FM 7-72 (1987)).

Forms of Maneuver

Maneuver is defined (FM 101-5-1 (1987), p. 1-44)) as "the movement of forces supported by fire to achieve a position of advantage from which to destroy or threaten destruction of the enemy." The five forms of maneuver presented below describe the positions of opposing forces in relation to each other (FM 7-71 (1987), p.4-8) and include: infiltration, penetration, turning movement, envelopment, and frontal attack.

Infiltration. Infiltration is a means of reaching the enemy's rear area while avoiding contact (i.e., without fighting through prepared defenses) (FM 101-5-1 (1985); FM 7-71 (1987); FM 7-72 (1987)). It involves moving all or part of the attacking force through enemy lines to a favorable position in the rear. Key to the success of an infiltration is the avoidance of detection and engagement by the enemy. Infiltration requires careful patrolling to find gaps or weak areas in the enemy's defense. Once these are identified, attacking forces can infiltrate, consolidate, and conduct offensive operations. For example, the infiltrated force can attack lightly held positions, isolate strongpoints, conduct ambushes, or destroy vital facilities while harassing and disrupting the enemy's defensive system.

Planning is a key ingredient for a successful infiltration. Commanders must have sound intelligence concerning the enemy's strength, location, and terrain occupied in order to make decisions concerning the choice of infiltration lanes, rally points, location of objectives, and possible fire support assets. When these conditions are met, the infiltration can deliver a swift, violent strike against enemy forces, capitalizing on the element of surprise.

Penetration. Instead of infiltrating through enemy defenses, LI forces can concentrate a strike at an enemy weak point and break through to rupture the defense. This is referred to as a penetration. A penetration is usually attempted when enemy flanks are unassailable, when time does not permit

another form of maneuver, or when the enemy is overextended and weak points in the defense are detected (FM 7-71 (1987); FM 7-72 (1987)).

To achieve success this maneuver requires speed. If enemy defenses are not penetrated and disrupted quickly, the enemy may have time to launch a flank attack against the attacking force or fall back intact, thus avoiding destruction. The location of the penetration should allow follow-on forces the ability to close in quickly and secure and widen the penetration. In addition, if the METT-T analysis identifies several weaknesses in enemy defenses, multiple penetrations may be made. These will disperse enemy fires and complicate commitment of enemy reserves. Care must be taken in assuring the penetration is not slowed or delayed. If this happens, the penetration resembles a frontal attack and may result in high casualties.

Turning movement. With the turning movement, LI units attempt to avoid the enemy's main defenses while striking deep within the enemy's rear, thus forcing the enemy to turn out of their defensive positions and attack rearward. To be successful, the attack must be directed at an objective the enemy will fight to save (e.g., lines of communication, supply routes, artillery emplacements, or a headquarters). The attacking force must also pose a real threat to the objective in order to assure the enemy force will be turned. Once turned, enemy forces lose the advantage afforded by their initial defensive positions and are more vulnerable to attack.

Envelopment. Envelopment also attempts to avoid the enemy's main defense and concentrates on maneuvering forces to strike at the enemy's flanks or rear. The envelopment begins by fixing the defender's forward position with a supporting or diversionary attack while the main force maneuvers around or over the enemy's defenses to an open flank, weakness, or gap in the enemy line. This maneuver forces the enemy to fight in several directions and provides avenues of approach for the attacker that may be lightly defended. For LI forces, scouts play a critical role in identifying gaps in enemy defenses and flanks that would be susceptible to this type of maneuver.

Frontal attack. The frontal attack is the least desirable form of maneuver used by LI forces. The frontal attack entails striking the enemy across a wide front over the most direct approaches. This exposes the attacker to the most concentrated enemy fire and decreases the effectiveness of the attacker's fire. This maneuver is used to overrun light defenses or disorganized enemy forces. It is also used in conjunction with other maneuvers to fix an enemy's position and should make maximum use of fire support on enemy defenses prior to attack.

Types of Offensive Operations

The 7-70 series identifies five types of offensive operations: movement to contact, hasty attack, deliberate attack, exploitation, and pursuit. Generally speaking, below brigade level, all offensive operations have three elements in common: reconnaissance and security operations; a main attack with supporting attacks as needed; and reserve operations (FM 7-71 (1987)).

Movement to contact. A movement to contact gains, maintains, or reestablishes contact with enemy forces. Once encountered, the LI unit quickly establishes enemy strengths, weaknesses, and intentions. As a rule, contact is made with the smallest possible enemy element to maintain flexibility and security. For LI units this is particularly important given their limited mobility and dependence upon restricted terrain (FM 7-72 (1987), p. 3-12). For LI units, it also helps to move at night to maximize stealth and surprise.

At battalion level, wedge, vee, single column, or multiple column formations are used to conduct movements to contact. The wedge is used to allow the battalion to mass faster, have greater flexibility, increase the probability of contact, and increase the ease of movement. The disadvantage of this formation is that it is more difficult to control. The vee is used to increase frontage, speed of reaction, and capability for envelopment. The disadvantages include difficulties in control and a smaller reserve force. A single column is used when time is not a critical factor; however, this formation is susceptible to delay tactics. Multiple columns are used when wide deployment is desired and speed is not a crucial concern; however, command and control becomes more difficult with this formation.

Hasty attack. There are two types of attacks: hasty and deliberate. They differ only in the amount of time available for planning. Often when contact is made with the enemy an advantage can be gained and maintained through quick, decisive offensive actions. When this scenario develops, the commander must rapidly assess the situation (via METT-T), and in the little time available, decide whether or not to attack. The resulting decision includes a scheme of maneuver, supporting fire plan, and fragmentary orders to subordinates to communicate the actions to be taken.

Deliberate attack. The deliberate attack is carefully planned and coordinated with all concerned elements based on thorough reconnaissance, evaluation of all available intelligence and relative combat strength, analysis of various courses of action, and other factors affecting the situation (FM 101-5-1 (1985)). The scheme of maneuver and fire support plan is much more detailed. The commander has more time to evaluate closely such things as routes to prevent enemy observation and detection, and designation of support, assault, and security elements.

Exploitation. Exploitation refers to those activities that follow a successful attack. Exploitation activities include such things as rolling up enemy flanks, isolating and capturing command and control centers, overrunning supply bases, denying escape routes to an encircled force, and destroying enemy reserves. For LI forces, exploitation is usually done as a part of a larger force. The successful exploitation may turn into a pursuit.

Pursuit. A pursuit normally follows a successful exploitation and the object is to maintain pressure on the enemy by intercepting, capturing, and completely destroying him. Once again, LI forces usually participate as a part of a larger force. LI forces function as the direct pressure force that denies the enemy rest, resupply, or the chance to regroup. They can also function as an encircling force to move to the enemy's rear to block any

escape. And finally, they may serve as a follow-and-support force whose mission is to destroy bypassed enemy units, relieve direct pressure forces, secure lines of communications, secure terrain, or guard prisoners.

Offensive Techniques

FM 7-72 (1987) offers five offensive techniques that represent only one example of how the forms of maneuver just described can be applied to a specific situation. The five techniques are: infiltration attack (infiltration), expanding torrent (penetration), baited attack (turning movement), search and attack (primarily envelopment), urban storm (penetration). LI doctrine stresses that the commander should fit the technique and form of maneuver to the situation at hand, rather than trying to make the situation fit the technique. Each technique is briefly discussed below.

Infiltration attack. The infiltration attack utilizes the infiltration maneuver described earlier. The infiltration attack is ideally suited for LI forces and provides excellent opportunities to disrupt enemy command and control, communications, combat service, and combat service support.

Expanding torrent. The expanding torrent technique is a penetration maneuver designed to breach an enemy defense quickly. At battalion level, four elements are established to accomplish this goal: breach, assault, follow-and-support, and reserve forces. The key here is the same as described earlier; there must be adequate intelligence to identify weak points in the defense and quick actions to avoid delays. At battalion level, companies are usually assigned the tasks associated with each element. Therefore, one company functions to accomplish the tasks of two of these elements. Usually one rifle company can execute both the breach and follow-and-support tasks.

Baited attacks. The baited attack utilizes the turning movement maneuver. Earlier we discussed this maneuver in terms of actions behind enemy lines to "turn" the enemy's defenses to confront that activity. In reality, there may not be a clear enemy line, and enemy reaction may come from any direction. In the baited attack, a secondary target is engaged with the intent of using planned ambushes and/or counterattacks to destroy enemy forces responding to this attack.

To accomplish a baited attack, three elements are formed: attacking, fixing, and counterattacking forces. The attacking force assaults the secondary target to draw the enemy's attention. The fixing force engages the enemy in designated engagement areas, and direct and indirect fires are used to fix the enemy and prevent withdrawal. The counterattacking element then counterattacks to the enemy's flanks and rear to attempt exploitation maneuvers if possible.

Search and attack. The search and attack technique is described in FM 7-72 (1987) as a "movement to contact technique peculiar to light infantry" (p 3-39). The technique is used to make contact with the enemy when enemy forces are widely dispersed, when enemy weaknesses cannot be identified, or

when the goal is to deny enemy movement in an area. Squad and platoon size forces search for the enemy under these circumstances.

For this technique, FM 7-70 (1986) distinguishes between two general methods used by LI squads and platoons. The first, search and attack, is when the LI unit is moving as a dispersed unit. The second, the conventional technique, is used when the squad or platoon is moving as a part of a company movement to contact.

Search and attack uses multiple, coordinated patrols to establish contact with the enemy. Once contact is made, the unit initiates a hasty or deliberate attack, depending upon the situation. Because much of a platoon's time is spent patrolling, FM 7-70 (1987) identifies several important aspects of patrolling that are relevant to the search and attack technique.

The conventional technique is used when the commander wishes to move or fight through an area and stealth, dispersion, and reconnaissance are not primary concerns. The goal is to make contact with the enemy, but in a narrower zone of action.

At battalion-level, the commander may use search and attack procedures to identify enemy positions, defeat enemy forces, fix the enemy force until other units arrive, or maintain surveillance of a larger force. In order to do this efficiently, commanders specify zones and boundaries within which units will have specified responsibilities. In addition, measures to link up with other units prior to attack, along with fire control methods, are established for all units involved.

Urban storm. Urban storm is another penetration technique. It differs from the expanding torrent because it is utilized in an urban environment. These attacks are almost always conducted at night or under cover of obscurants. Due to its restricted nature, urban terrain is ideal for LI operations. Urban terrain canalizes enemy forces and restricts mobility to such a degree that LI forces can be a devastating combat force.

At battalion-level, three elements (usually companies) are organized to conduct this attack: assault, support, and reserve forces. The assault element is used to break into buildings and advance through the urban area. The support element supports and reinforces the assault element. Once the building area is secured, the support element establishes defensive positions. The reserve element supplements the assault element, secures the flanks, and establishes blocking positions, if necessary.

The general scheme of movement is for the assault element to attack as fast and as far down an axis of advance as possible. Normally, it does not stop to clear buildings or reduce strongpoints; these are identified and isolated to be dealt with by follow-on elements. The assault element moves quickly, using covered and concealed routes as much as possible (i.e., avoiding the use of streets). Urban storm attacks are decentralized and require flexibility and initiative in the LI unit conducting the attack (FM 7-71 (1987); FM 7-72 (1987)).

Special purpose operations. Reconnaissance in force is an operation to discover and test enemy dispositions, composition, strength, and intentions. Normally, the battalion is the smallest LI unit that conducts a reconnaissance in force. When reconnoitering, the LI battalion will plan and execute either a movement to contact or an attack. By doing this, contact with enemy forces can indicate such things as enemy troop locations and the types of weapons at the enemy's disposal.

On occasion, a battalion will be held in reserve for a LI brigade conducting a deliberate attack. This battalion may be used for a wide range of actions which include exploiting the success of an attack, maintaining momentum of an attack, or providing security as needed (FM 7-72 (1987), p. 3-49). This diversity causes the battalion in reserve to face a complex planning task.

A third special purpose operation, battalion ambush, is often used when intelligence about enemy dispositions and intentions is limited. An ambush carries the element of surprise and allows the LI commander to choose the location to engage the enemy.

LI units also conduct raids, which are deliberate attacks with a planned withdrawal from the objective. The raid, like a deliberate attack, can be used to destroy or capture enemy personnel or equipment, rescue friendly personnel, gain intelligence, or gain initiative. The distinguishing characteristic of a raid is the detailed, well-planned withdrawal from the objective. This plan includes routes covered by preplanned fire (to discourage enemy pursuit) and a signal to withdraw.

Another operation utilizing LI forces is air assault. Air assault operations use the firepower, mobility, and total integration of air assault, ground, and aircraft. Assault forces maneuver under the control of the ground or air maneuver command to engage and destroy the enemy. Air assault assets increase the speed and mobility of LI forces. Use of helicopters provides the ability to project LI forces faster and farther into enemy territory, and this allows involvement in a wider range of missions. Planning for these operations is usually done no lower than battalion level.

The last special purpose operation is the counterattack. Counterattacks are normally conducted by a reserve or lightly committed force and are directed at an assailable enemy flank after the enemy's main attack has passed. Most counterattacks are hasty attacks. Brigade counterattacks are usually conducted by battalions or companies.

General Defensive and Retrograde Operations

The fundamental purpose of a defensive operation is to defeat an enemy attack. Defensive operations can also gain time, concentrate forces elsewhere, control key or decisive terrain, wear down enemy forces as a prelude to offensive operations, preserve the force, and retain tactical objectives (FM 100-5 (1987); FM 7-72 (1987)). Retrograde operations are organized movements to the rear away from the enemy. These may be forced by

the enemy or voluntary and are classified as withdrawals, retirements, or delaying operations. Both defensive and retrograde operations contribute to establishing conditions that are favorable to assuming the offensive. LI doctrine emphasizes the advantages of establishing an aggressive defense.

Successful defensive operations are characterized by sound preparation, disruption of enemy operations, concentration of combat power at critical locations in the defense, and flexibility in planning and executio. to counter the enemy attack decisively. Sound preparation is crucial and entails arriving at the battle area before the attacker, preparing maneuver plans, constructing deceptions to entrap enemy forces, establishing concealed positions, and in general, making optimal use of the time before the attack to gain every defensive advantage possible.

LI units can perform defensive operations in a variety of tactical situations that range from self-protection to coordinated operations with heavy forces. For example, LI units might be tasked to deny or delay passage of dismounted infantry infiltrating through close terrain, retain a chokepoint in restrictive terrain, defend in sector as a part of a larger force, or hold a key road intersection in coordination with a heavy force.

At brigade level and below, all defenses consist of three elements: security, defensive, and reserve (FM 7-71 (1987), p. 5-6). The security element is responsible for observing and reporting enemy forces and may be required to conduct such activities as indirect fires. In addition, the security element may be tasked to determine enemy strength, location, direction of movement, and main effort. The defensive element is responsible for the unit's main defensive tasks (which are presented and discussed later). The reserve element's main responsibility is to regain the initiative through counterattacks. They also reinforce committed forces, block any enemy penetrations, or recapture lost positions.

Specific Defensive Operations

There are several defensive operations that LI units may be required to execute, primarily because defensive operations are integrated into almost all operations. FM 7-72 (1987) discusses the four most traditional defensive operations: Defend in sector, defend from a battle position, defend from a strongpoint, and the perimeter defense. Each operation is presented below.

Defend in sector. One of the most frequently used defensive operations is the defense in sector. It requires the unit to defend an area defined by two lateral boundaries (left and right), a rear boundary, and the forward edge of the battle area (FEBA). FM 101-5-1 (1985) defines the main battle area (MBA) as the portion of the battlefield extending rearward from the FEBA to the rear boundaries of those units comprising the main defensive forces. The MBA is where the decisive battle is fought to defeat the enemy attack. Defending in sector may involve denying enemy penetration forward in the sector, countering enemy attempts to infiltrate, or drawing the enemy into the sector to expose flanks and rear areas to attack. Examples might include the defense of a river crossing site, denial of road or trail use in an area, or

the emplacement of impediments along a major, high-speed avenue of approach through close terrain to force a mechanized unit to dismount.

Defend from a battle position. A battle position is a defensive location oriented on the most likely enemy avenue of approach from which a unit may defend or attack. Battle positions are normally used when key terrain must be held or when the position commands a good engagement area (a location with terrain suited to concentrating fires). When defending from a battalion position, LI units use obstacles to slow the enemy and to canalize him into the engagement area where flank and rear attacks can be initiated.

Defend from a strongpoint. A strongpoint is a defensive position strongly fortified and heavily armed with automatic weapons. For light infantry, the strongpoint is located in restricted terrain, such as urban areas, mountains, and thick forests that cannot be easily bypassed. It is essentially an antiarmor nest. To ensure the strongpoint cannot be easily bypassed, engineers are required to perform countermobility and survivability tasks.

The strongpoint can be located anywhere in the main battle area depending upon time and resources available, engineer support availability, and the particular terrain of the area. Generally speaking, the strongpoint should have the following characteristics: many covered and concealed routes between positions; adequate stockpiles of food, water, ammunition, and medical supplies; several means of communication within the strongpoint and to higher headquarters (e.g., radio, wire, messenger); and the strongpoint should itself be an obstacle to enemy mounted movement.

The perimeter defense. A perimeter defense is executed in the same manner as the battle position defense, with one exception. The perimeter defense is oriented toward 360 degrees. Units and personnel are distributed more or less equally throughout all 360 degrees and have interlocking fires to their right and left. Combat power is concentrated at the outer edge of the position. Any penetration of the perimeter is immediately counterattacked. This operation is used to defend assembly areas, hide positions, or patrol bases. It is also used to defend the specific location of such things as downed aircraft, landing zones, or bridges.

Retrograde Operations

As stated earlier, retrograde operations are organized movements to the rear away from the enemy that may be voluntary or forced by the enemy. There are three types of retrograde operations: delays, withdrawals, and retirements. Retrograde operations must be approved by higher command and should always result in a more advantageous position. Reasons to conduct retrograde operations include: gaining time, avoiding unacceptable losses, drawing the enemy into a more vulnerable situation, disengaging to allow commitment of forces elsewhere, realigning the force to eliminate exposed flanks, shortening lines of communication, or accommodating the movement of other friendly forces.

An important consideration with these operations is mobility. LI forces must have mobility equal to or greater than that of the enemy to conduct successful retrograde operations. In addition, the LI force should remain in defensible terrain and degrade enemy mobility as much as possible while fighting rearward. Mobility in LI retrograde operations is enhanced if the more mobile forces (e.g., the antitank and transportation sections) are used to cover and support the withdrawing force. Deception is also important. Deception (feints, demonstrations, fake minefields, etc.) provides security to units that are withdrawing by delaying enemy forces.

Delays. Delays function to slow enemy forces or draw them into an unfavorable situation. Generally, the delaying force must maintain contact with the enemy to avoid being outmaneuvered, to provoke the enemy to plan and conduct successive attacks, to preserve its freedom to maneuver, and to maintain operational coherence.

The keys to effective delays are to remain offensively oriented and retain maneuverability. Ambushes, raids, counterattacks, snipers, mines, indirect fires, booby traps, and obstacles are used to keep the delay offensively oriented. To retain maneuverability, LI units must follow these offensive actions with rapid withdrawals. To ensure success, LI commanders must use infiltration and exfiltration procedures, stay behind operations, restricted terrain, limited visibility, camouflage, and deception at every opportunity. LI units must utilize these actions because they cannot expect to "outrun" the enemy, which has greater mobility than the LI force. Decentralized operations generally make the delay operation more effective. Smaller units are easier to hide, and the percentage of the unit at risk is kept to a minimum.

If the delay is enemy oriented, as opposed to terrain oriented, the focus is on keeping the enemy from advancing faster than a specified rate. Terrain-oriented delays focus on holding particular terrain for a specified time or until a particular event occurs. Any mission that requires this type of delay is risky.

Withdrawals. The purpose of a withdrawal is to disengage from the enemy. For LI forces, a successful withdrawal requires at least equal, if not greater, mobility than the enemy. Withdrawals are of two types: those conducted under enemy pressure, and those conducted without enemy pressure.

For LI battalions, withdrawal from a defensive position not under enemy pressure requires the organization of a main body and a detachment left in contact (DLIC). The DLIC is normally organized from the platoons of forward companies and is commanded by the battalion XO. Although one company could be the DLIC, usually each company will leave a platoon as its part of the battalion DLIC. The purpose of the DLIC is to deceive the enemy into believing the battalion is still in position as the majority of units withdraw. If the withdrawal is discovered and the enemy attacks, the DLIC defends and delays as much as possible until after the main body has begun movement to the next mission. Deception and operational security are very important for success of this operation. Reduced visibility (night, fog, snow, rain, or smoke) is also an asset.

If under enemy pressure, a security force and a main body are organized. The security force conceals the withdrawal of the main body and deceives the enemy by continuing the normal operation pattern of the battalion. If the enemy attacks during the withdrawal, the security force covers the withdrawal with fires. The security force withdraws once the battalion reaches its next position or a designated distance from the old position. If under attack, the security force may have to maneuver to the rear until contact is broken.

In addition to these groups, each company sends a quartering party to the next position before the withdrawal starts. Members of the quartering party act as guides to their units as they arrive at the new location.

Retirements. A retirement is a retrograde operation in which a force not in contact moves away from the enemy. A withdrawal becomes a retirement after the main force has disengaged from the enemy and march columns have been formed. At battalion level this operation is usually conducted as a part of a larger force. Retirements, just like other retrograde operations, can be used to increase the distance between the defender and the enemy, provide a means to occupy more favorable territory, or function to shorten the distance from CSS elements. Restricted visibility also increases the probability of success of retirement operations.

Defensive Techniques

FM 7-72 (1987) describes four main defensive techniques that might be used in accomplishing LI defensive operations. There are numerous techniques and combinations of techniques that can be used. Which one is used depends upon the situation and the mission. The most common defensive techniques used by LI forces include: reverse slope, elastic, seamless web, and urban web (archipelago).

Reverse slope. Before discussing the reverse slope defense, it is necessary to define some terminology, identify the terrain used for this type of defense, and indicate the orientation of friendly and enemy forces. Figure 4 identifies key terrain features and enemy orientation to help illustrate the reverse slope defense.

Generally speaking, the reverse slope is used by LI forces in hilly terrain for protection from enemy long-range direct fires and to reduce the effects of massive indirect fire (artillery and close air support). The reverse slope defense orients on denying the topographic crest to the enemy with a bold, offensive-oriented defense. This consists of (but is not limited to) a well laid out and thoroughly integrated obstacle and fire support plan, positions in depth, and vicious, hasty and deliberate counterattacks.

Ideally, LI forces attempt to prepare a situation which will encourage the enemy to commit his forces against the forward slope of the defense. As this happens, he is exposed to direct and indirect fires from reverse slope positions which are shielded from enemy direct and indirect fires and observation by the topographical crest (See Figure 4.).

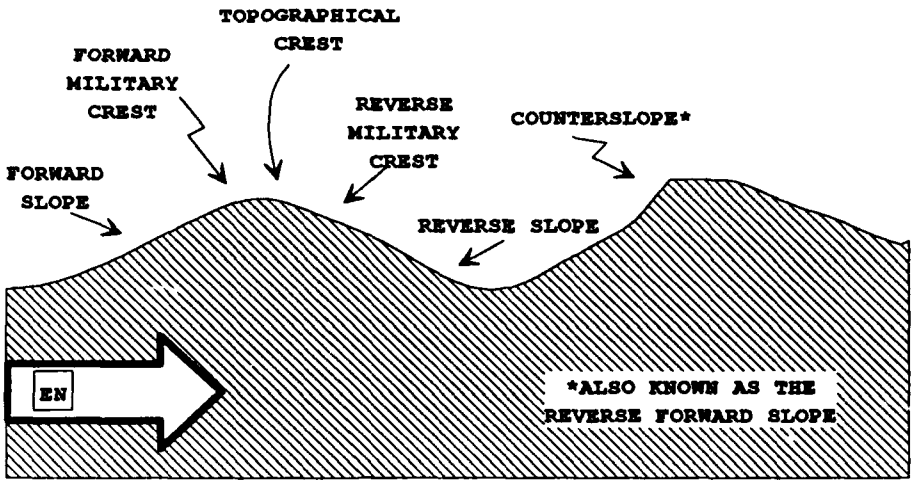

Figure 4. Terrain features and enemy orientation.

In order to conduct this defense, forward detachments are placed near or forward of the topographical crest to provide long-range observation of both flanks and the front. The main defensive positions on the reverse slope should provide good grazing fields of fire up to the crest. In general, the defensive positions should permit fires to be delivered on enemy approaches around and over the crest, and on the forward slopes of adjacent terrain features, if applicable.

The reserve force for this defense is normally located on the counterslope (reverse forward slope), or on the reverse military crest. They are responsible for blocking enemy penetrations and supporting forward elements by fire. They are also responsible for the unit's rear, counterattacks, flank security, indirect fire support, routes of withdrawal, and assisting in evacuation of casualties.

The fire support for this defense is composed of M60 machineguns, squad automatic weapons (SAWs), and other automatic weapons strategically placed to inflict maximum surprise and enemy casualties. Mortars and antitank weapons are positioned in concealed locations where their ranges can be maximized. In addition, indirect fires and close air support should be planned throughout the battle area. It is imperative that immediate indirect fire registration must take place either while emplacing the reverse slope defense or upon retaking the crest after a counterattack (FM 7-72 (1987), p. 4-32).

A reverse slope defense begins with delaying actions by a reconnaissance force and a security force to contact, disrupt, and deceive the enemy. Forward detachments attempt to further delay, disrupt, and canalize the enemy force with long-range, indirect fires, obstacles (e.g., wire, mines, booby traps), and small ambushes. Observations and fires are maintained over the entire forward slope as long as possible. The battle builds as the enemy

approaches the topographical crest and is hit with indirect fires. If they cross the topographical crest, they begin entering the MBA where direct fire is applied. An ideal time for a counterattack is when the enemy crests the hill and is destroyed by weapon fire. Successful execution of the reverse slope defense depends upon several things including: enough time to construct durable, well-prepared defenses supported by engineer sappers, proper terrain, effective forward observation, and excellent planning and timing of fire support, massed fires, and counterattacks.

Elastic defense. The elastic defense is a technique used during a defend in sector operation. It is the most offensively oriented defensive technique employed by LI units. It allows for planned penetrations, ambushes, and counterattacks throughout the depth of the sector using dispersed small units (down to squad). The sector is organized to take advantage of small-unit tactics.

Each platoon and squad conducts detailed reconnaissance of its sector and identifies such things as likely enemy avenues of approach, choke points, kill zones, obstacle sites, patrol bases, pickup zones, cache sites, and potential defensive positions. This information is supplied to the commander, and gives direction concerning the formation of defenses.

The emphasis in this defense is on the enemy. Small units are given leeway to engage the enemy as much as possible while the enemy is in a particular unit's sector. Depending upon the METT-T analysis, the whole battle may be fought in this manner. This technique is very useful in denying the enemy use of a trail or road network in restricted terrain. It is also useful to deny chokepoints (a mountain pass, bridge, or highway through wooded terrain) or passage of dismounted infantry through close terrain.

Seamless web defense. The seamless web defense is a technique to concentrate firepower into a particular engagement area. This engagement area is defined by a web of interlocking friendly forces that have coordinated their firepower to minimize the likelihood of being hit by friendly fire and maximize the amount of fire directed into the engagement area. This technique can be used in all defensive operations. It differs from the elastic defense by emphasizing concentrated fire into a given engagement area, rather than small unit activities throughout a given sector.

The positions of the units that define this web are established in accordance with the terrain of a particular area. Positions are chosen off natural lines of drift which help concentrate enemy forces in a given area. Indirect fires and obstacles are used to help in this process by slowing and stopping the enemy in the engagement area. Doing this allows fires to be directed into the flanks and rear of the enemy. This type of defense can be employed by LI forces when denying chokepoints, operating in a counter-infiltration role, or when defending against a motorized unit moving through restricted terrain.

Urban web (archipelago). Generally speaking, LI forces defending in urban terrain use techniques outlined in FM 90-10 (1979), Military Operations on Urbanized Terrain (MOUT). However, they can utilize the urban web

(archipelago) technique. Much as the name implies, this defensive technique involves establishing an interconnected web of battle positions and strongpoints on islands of armor restricted terrain (primarily small villages and heavily wooded areas).

The goal is to force the enemy into engagement areas that are covered by the battle positions in the restricted terrain. Each strongpoint or battle position has a single commander in charge of infantry, antiarmor, and indirect fire weapons (Dragons, TOWs, and mortars). LI protects the antiarmor and mortar gunners from dismounted assault, conducts raids and ambushes, provides intelligence, and calls for and directs indirect fires, close air support, and attack helicopter support. Obstacles are constructed to slow, canalize, and stop the enemy in the engagement areas to be destroyed.

In addition to battle positions, there will be pockets of resistance that conduct passage operations and harass the enemy's main attack and CSS elements. LI units are well suited to form these pockets of resistance and conduct activities such as attacking communications facilities and logistics sources.

Special defensive operations. In addition to primary defensive operations, FM 7-72 (1987) identifies five special defensive operations that may involve LI units. These include lodgment, stay-behind, breakout from encirclement, passage of lines, and relief in place.

Lodgments are military footholds in enemy territory. There are two types: forced entry and unopposed entry. LI forces are specifically designed for unopposed lodgment operations. The assistant division commander usually commands an advance party which is sent ahead of the main body to coordinate with the host nation, the American embassy, special operating forces (SOF), or other units in the area.

This coordination involves procuring local maps, determining availability of water, rations, and medical supplies, accessing local communication systems, coordinating the arrival of the main body, and gathering information pertaining to location of enemy forces and key installations. The lodgment area becomes a designated, secure area that permits the air or sea landing of follow-on forces and provides the maneuver space needed for planned operations. It may include all brigade and divisional CS and CSS elements as well as some corps or joint task force assets.

Stay-behind operations can be either planned or unplanned. In a planned stay-behind operation, a unit hides to allow the opposing force to bypass them. Then, the stay-behind force attacks the enemy from a flank or rear position. The unit is prepared to operate in enemy territory for a specified time or until a specified event occurs. In an unplanned stay-behind operation, a unit may find itself cut off from other friendly forces for an indefinite time but may be able to conduct flank and rear attacks. LI forces can perform these operations successfully in very restricted areas as a part of defense or delay missions terrain, even though they are considered high-risk, high-payoff options.

Breakout from encirclement represents one such option. LI units may become encircled either by design or due to the dynamic nature of the battlefield. This occurs when the unit is defending a strongpoint (enemy forces may bypass and attack later), holding key terrain, or trying to hold the shoulder of a friendly or enemy penetration. Encircled forces can perform either a breakout attack or an exfiltration toward friendly forces. The breakout attack focuses combat fire on a weak point in the defense and is done before the enemy has time to realize the force is encircled, to report its location, and to organize a better plan of attack/defense. The exfiltration towards friendly forces option is better suited to LI units. This option involves organizing the encircled force into small groups and exfiltrating through gaps in the enemy's defense. Nonessential equipment is left behind, and wounded are left with supplies and medical attendants.

A passage of lines is an operation in which one unit moves through the positions of another unit. This may occur when elements of a covering force withdraw through the forward edge of the main battle areas, or when an exploiting force moves through the elements of the force that conducted the initial attack (FM 101-5-1 (1985)). LI units often use passage of lines during infiltrations and raids. In general, the positions of forward units are treated as danger areas because they are assumed to be under enemy surveillance at all times. Therefore, detailed reconnaissance and coordination are required.

Relief in place is an operation whereby a unit is replaced in combat by another unit. This can occur during offensive or defensive operations. The purposes of relief in place operations include: the replacement of a combat ineffective force; relief of a unit that has conducted prolonged operations; or replacement of a unit that requires medical treatment or decontamination as a result of exposure to chemical or nuclear munitions.

Combat Support

Combat support (CS) is the fire support and operational assistance provided to combat elements (FM 101-5-1 (1985)). The CS provided to a LI battalion is of two types: organic and nonorganic. Organic support assets are those included within the battalion and were discussed earlier in terms of the organization and command and control of the LI battalion (e.g., scout, antiarmor, and mortar platoons). Nonorganic support assets are external to the battalion organization and are made available to the battalion upon request. Nonorganic support consists of the division artillery, aviation brigade, air defense artillery battalion, engineer battalion, military intelligence battalion, signal battalion, military police company, and additional corps assets from the Air Force and Navy (FM 7-72 (1987)).

Nonorganic support units are either "attached" to a particular unit or fall under the "operational control" of a particular unit. Attached units are those that are placed in an organization on a temporary basis. The gaining commander of the unit exercises the same degree of command and control and responsibility over the attached unit as the regular unit (FM 7-71 (1987); FM

7-72 (1987)). In addition, the commander is responsible for administrative and logistical support of the attached unit. An example would be an ANGLICO team attached to a LI battalion to coordinate naval gunfire and air support for the battalion.

A unit under the operational control (OPCON) of another unit is one that has been provided to another commander to accomplish specific missions or tasks, which are usually of short duration. OPCON does not include administrative or logistical responsibility (FM 7-71 (1987); FM 7-72 (1987)). In most cases, LI forces uses OPCON command relationships because of its limited combat service support structure. For example, an engineer platoon may be placed under OPCON to a LI battalion to clear enemy defensive preparations.

There are situations where combat support units are neither attached or under operational control of a unit; however, they still provide combat support. This nature of the relationship can be described as providing direct support (DS), general support (GS), general support reinforcing (GSR), or reinforcing support (REINF). Units in DS of a battalion have as their first priority that battalion's needs. Priorities for units in GS, GSR, or REINF are established by the LI brigade or division commander.

Following is a discussion of particular nonorganic assets that are provided to LI units, depending upon availability. These include: field artillery, naval gunfire, close air support (CAS), air defense artillery (ADA), army aviation, engineer support, military police, signal, and electronic warfare and intelligence.

Field Artillery

At battalion level, field artillery support is provided by 105-mm or 155-mm howitzers from division artillery units (DIVARTY). Each brigade usually has one battalion of 105-mm howitzers in its direct support provided by DIVARTY. One GS battery (eight tubes of 155-mm artillery) in each LI division can provide maneuver battalions with advanced munitions fire support. The Copperhead munition provides a laser-guided antiarmor capability. In addition, the remote antiarmor mine system (RAAMS) and the area denial artillery munitions (ADAM) provide quick means of hampering vehicle movement and breaching activities by dismounted infantry. All fire support assets in the LI battalion are coordinated by the fire support officer (FSO) who works closely with the battalion commander, S2, and S3 (FM 7-72 (1987)).

Naval Gunfire

Naval gunfire is delivered by ships' batteries to support amphibious operations and maneuver units near coasts (FM 7-72 (1987)). Each gunfire support ship is assigned the tactical mission of either DS or GS. A ship in DS normally supports a battalion and delivers planned and immediate fires. A ship in GS normally supports a brigade and prioritizes available fire support to its battalions.

Close Air Support (CAS)

Close air support is air action against hostile targets that are in close proximity to friendly forces (FM 101-5-1 (1985)). CAS requires detailed integration of air missions with the fire and movement of those forces. CAS is requested when organic weapons and supporting fires (indirect and Army aviation) cannot effectively engage the target or are not sufficient to achieve decisive results (FM 7-72 (1987)).

To assist in planning and controlling tactical air support, a tactical air control party (TACP) is often assigned to the battalion. The air liaison officer (ALO) advises the battalion commander on the employment of tactical air power, plans and control CAS, and maintains the USAF air request radio net. If an ANGLICO team is assigned to the battalion, one member will be an ALO to handle requests for Navy and Marine CAS.

CAS requests can be carefully planned (precise times and briefs to the pilots) or immediate, as a result of unforseen requirements which force immediate action with limited planning and coordination. Preplanned requests for CAS, originating at company level, are screened by the assistant battalion S3, the FSO, and the ALO before approval by the battalion S3. Immediate requests for CAS are sent to the battalion fire support element, validated by the assistant battalion S3, and the FSO, and given to the TACP. The battalion TACP transmits the request directly to the CAS operations center over the USAF air request net.

Air Defense Artillery

Air defense artillery (ADA) is used to defend the LI unit from attack by enemy aircraft. Because the ADA battalion in the LI division is austere, ADA assets will rarely be attached to the battalion. Presently, each battalion has to rely on at least one infantryman who is cross-trained as a Redeye/Stinger gunner to provide ADA support.

Army Aviation

Army aviation assets are controlled at division level and may be requested by a particular LI unit. Helicopter assets available in the aviation brigade include the division recon squadron, the division attack helicopter battalion, and the division assault helicopter companies. These assets aid in maneuver, command and control, air assault operations, reconnaissance, medical evacuations, resupply, troop movement, and fire support. The division assault helicopters can lift the assault elements of one infantry battalion all at the same time. Due to their speed, mobility, flexibility, and armor-defeating firepower, attack helicopters can provide quick responses and deadly firepower in both offensive and defensive operations. FM 90-4 (1987), Air Assault Operations, provides additional information concerning Army Aviation.

Engineers

Engineer support from the division engineer battalion may be in the form of a command or support relationship; however, engineers typically fall under OPCON or are attached to a particular LI unit. Engineers attached to LI units are usually sappers. Sappers are specially trained engineers who rely on field expedients, ingenuity, and training rather than equipment to carry out their tasks. They are experts concerning mobility, countermobility, and survivability.

At the infantry battalion level the engineer representative, normally an attached engineer platoon leader, is the maneuver commander's expert on mobility, countermobility, survivability, and general engineering. Mobility primarily refers to obstacle reduction and is most important in offensive operations. Countermobility primarily refers to the construction of obstacles (antitank ditches, mines, wire, demolitions) and is very important in defensive operations. Survivability concerns the construction of fighting and protective positions such as strongpoints, camouflaged positions, and support of deception operations. Engineers provide general engineering tasks such as minor repair and maintenance of main supply routes and logistic facilities.

Diverse Units

The last three nonorganic support units (military police, signal, and electronic warfare and intelligence) are described by FM 7-72 (1987) as "diverse units" which may be operating in the brigade area of operation and not necessarily as an asset of the battalion. The military police company supports the division with main supply route movement control at critical points and evacuates enemy prisoners of war from division forward collection points. The signal battalion is responsible for maintaining continuous communications from division to maneuver units through the use of multichannel tactical satellite systems, high-frequency radio nets, and line-of-sight multichannel systems. Electronic warfare and intelligence support is supplied by the military intelligence battalion and provides voice communication collection, ground surveillance radar, counterintelligence, interrogation, and intelligence analysis.

Combat Service Support

Combat service support (CSS) is the assistance provided to sustain combat forces, primarily in administration and logistics (FM 101-5-1 (1985); FM 7-71 (1987)). CSS is a combat multiplier because all things being equal, soldiers who have enough food, water, ammunition, shelter, and medical assistance fight better (FM 7-71 (1987)). For LI units, CSS is limited. LI units are organized in such a manner to deploy and operate for 48 hours without external resupply.

CSS Organization

The division support command (DISCOM) is functionally organized into a maintenance battalion, supply and transportation battalion, a medical battalion, and an aviation maintenance company. The division G4 develops a coordinated logistics plan which provides CSS guidance to brigade and battalion commanders.

CSS operations are centered around the brigade support area (BSA) and the battalion trains. The BSA is a secured area designated by the brigade S3 and S4 and serves as the logistical base for the brigade. It is normally located 20 to 25 kilometers behind the forward edge of battle and contains the forward area support team (FAST), the forward area support coordinator (FASCO), and usually, the battalion field trains. The battalion S4 is the logistics planner and is responsible for all logistical functions. These include supply, transportation, mess, and maintenance. In addition, he supervises the support platoon leader.

The FAST is a logistics task force put together by DISCOM to provide supplies, forward maintenance, and medical support to the brigade. It is controlled by the FASCO. The FAST normally contains a forward supply company, a forward support medical company, and a forward support maintenance platoon. The forward supply company functions to provide the following classes of supply: Class I (subsistence items and gratuitous issue health and welfare items, meals ready to eat [MRE], T-rations, and fresh fruits and vegetables); Class II (items of individual equipment, clothing, tentage, tool sets, and housekeeping supplies); Class III (petroleum, oils, and lubricants [POL]); Class IV (construction and barrier materials); Class V (ammunition); and Class VII (major end items such as vehicles, missile launchers, self-propelled artillery pieces). Water supply is handled through the water section of the supply and transport battalions HQ and supply company.

Battalion trains are the CSS personnel and equipment that provide supply, evacuation, medical, and maintenance services which allow sustained operations. The S4 may echelon (arrange) these into field trains and combat trains based on the battalion commander's guidance and operational concept. Combat trains are those CSS resources required to respond immediately to the needs of forward tactical elements. They usually provide Class I, III, and V types of supply. Field trains consist of CSS resources not required to respond immediately.

Normally, field trains are placed in the BSA, while combat trains are located close to the battalion S4 and S1 in order to keep abreast of battalion tactical units' needs. The support platoon leader functions as the battalion's logistics operator, supervises operations in the field trains, and coordinates with the FASCO. The S4 supervises the movement of combat trains to maximize the amount of support (e.g., critical items, medical support) they provide to combat elements. BN train resupply operations function to reconstitute the soldier's basic load. Specific missions dictate special resupply needs, therefore awareness of basic load requirements of soldiers in a given situation (based on METT-T) improves CSS planning.

Basic Soldier Load

As FM 7-71 (1987) points out, Army research indicates that soldiers can carry an amount equal to 30% of their body weight and still retain a high percentage of agility, stamina, alertness, and mobility. On average, this equals 48 pounds for the typical soldier. If the load exceeds 45% of body weight, roughly 72 pounds, functional capacity drops rapidly and casualty rates increase. Research also indicates that training can improve this load-carrying capability by only 10 to 20% at best. Therefore, soldiers expected to engage in combat have a better chance of survival if carrying no more than 30% of body weight and carrying more than 45% of body weight is not recommended. In reality, soldiers may at times be required to carry more weight than is recommended, but leaders must realize the impact this can have on performance.

The basic LI soldier's load for deployment consists of the following: a three-day supply of rations (two carried by the soldier and one carried by the battalion support platoons); a one-day supply of potable water (each soldier carries one gallon and the battalion support platoons carry another 1.4 gallons); a two-day supply of fuel and POL; one set of nuclear, biological, chemical (NBC) protective clothing with the capability for a second to be carried by the battalion support platoon; and a one-day supply of ammunition. Of course, this load is subject to change with different missions and conditions (FM 7-72 (1987)).

In order to facilitate the resupply process, standard resupply packages are put together. These are called logistic packages (LOGPACs), and LOGPAC resupply should be conducted before and after each combat operation. Delivery of LOGPAC items to rifle companies depends on a vehicle with trailer controlled by the company supply sergeant. The vehicle transports rations, water, and fuel, and transports small equipment items to and from maintenance. Normally, two trips are made daily depending upon the intensity of combat and factors of METT-T. Air resupply should always be considered as a means to augment the LOGPAC procedure and to reduce strains on the support platoon. Generally speaking, ground transportation in LI units is scarce and additional support has to be planned and coordinated with the FASCO.

Other CSS Considerations

Most of the CSS components described thus far concern logistical aspects of CSS. In addition, the personnel officer (S1) is responsible for many other important functions that are essential for smooth operation of the CSS system. These include such things as personnel services, morale, discipline, processing of enemy prisoners of war, and administrative services.

Specifically, the battalion S1 is responsible for a wide range of tasks, including: determining battalion numerical strength, losses, and replacement data for battalion and brigade use; receiving, orienting, supporting, and assigning replacements; monitoring morale and esprit de corps in the unit and keeping the commander informed (may influence morale through coordinating such things as leaves and passes, postal services, exchanges, and religious

activities); ensuring that discipline, law, and order are observed in the unit; processing and handling enemy prisoners of war in the appropriate manner; and providing administrative functions in the form of typing and record keeping services to the companies. The chaplain provides and coordinates religious activities.

Heavy and Light Force Integration

In addition to the LI doctrine presented thus far, there are some specific issues included as appendix material in the 7-70 series of field manuals. We will examine one of these most important issues, heavy and light force integration, because the modern battlefield includes the scenario in which LI forces will be called upon to augment heavy forces.

Heavy forces (armor and mechanized) perform optimally in mid- to high-intensity conflicts; however, their effectiveness is diminished in restricted terrain such as urban areas, forests, and mountains. It is in these restricted environments that augmentation with LI forces can provide a tactical advantage.

In general, cross-attaching of heavy and light units below brigade level is not recommended because of command and control and CSS difficulties. LI divisions have very limited CSS capabilities and cannot logistically support a heavy force. Corps commanders are aware of such realities, which has resulted in the development of general guidelines that are used when considering heavy/light force integrations. These include the fact that LI brigades can augment heavy divisions for indefinite periods, but LI battalions should only augment heavy brigades for specific missions. In addition, heavy brigades are not usually task organized to a LI division. And finally, LI units should not and cannot be used to alleviate dismount strength weaknesses of the heavy force (FM 71-3 (1988), Armored and Mechanized Infantry Brigade).

Once the decision is made to task organize a heavy/light force, the corps commander must decide whether to make the command relationship one of attachment or OPCON. The general rule is to place either a heavy brigade OPCON to a LI division or attach a LI battalion to a heavy brigade. Because the heavy brigade has integral CS and access to corps CSS assets, it can be placed under OPCON to a LI division for a long time. Attaching a LI battalion to a heavy brigade is recommended only for a specific mission or short duration because of CSS limitations mentioned earlier (FM 71-3 (1988)).

Command and control in a heavy/light force does not change per se; however, commanders and staff must address problems caused by attempting to control units with different techniques, weapons, mobility capabilities, communications equipment, and support requirements. A major consideration is the fact that LI units are not as mobile and have less organic firepower than most mechanized and armor units. LI forces also require more detailed knowledge of the enemy (size, location, mechanized, armor) to reduce risk.

The LI battalion attached to a heavy brigade has limited CS. The heavy brigade must plan to provide CS as required, especially antiarmor capability,

such as scatterable mines. The need to provide major CS increases is decreased if the LI battalion is assigned missions that are consistent with its design.

CSS is the major challenge facing heavy/light force integrations. LI divisions have particular problems supporting a heavy brigade in the areas of fuel, ammunition, maintenance, recovery, and repair parts. For example, LI division maintenance support is based on a maintenance exchange item concept while the heavy brigade is based on a repair parts concept. LI units require resupply of some items not stocked by heavy brigades. FM 7-72 (1987) identifies several other problems and mismatches that hinder heavy/light integrations and stipulates that cross-attaching elements below brigade level places undue logistical burdens on both units.

Another major factor that affects heavy/light force integration is mobility. LI units are not as mobile as mechanized or armored units. LI units, compared to mechanized and armored units, have problems in performing operations or techniques that rely heavily on mobility, such as deep penetration, exploitations, pursuits, withdrawals, or retirements. This difference is not tremendously important if LI units are deployed as they should be in restricted terrain. However, the difference in mobility is a factor that must be addressed when LI units and heavy units are integrated. Appropriate external ground and air assistance must be provided to the LI units if the integration is to be successful.

Given these considerations, LI units can still provide several offensive and defensive assets to a heavy force. For example, the LI force can perform the following offensive operations: Fix an enemy force in restricted terrain while the heavy force maneuvers to attack; instigate a penetration through which the heavy force can pass; conduct raids behind enemy lines to aid in a subsequent attack by heavy forces; seize a blocking position in restricted terrain oriented to stop either enemy reinforcements or withdrawals; seize a chokepoint to assist the forward maneuver of a heavy unit; and conduct air assault operations supported by the heavy unit.

For defensive operations, LI forces maximize the advantages afforded them by restricted terrain. They are especially helpful to heavy forces in urban environments. LI forces can stop the advance of the enemy in urban terrain, thus making them more vulnerable to attacks by heavy forces. In particular, the LI force in restricted terrain can allow heavy forces to maintain their maneuverability. And finally, LI defensive positions help canalize enemy forces into areas of attack by the heavier forces.

In conclusion, the integration of heavy and light forces produces a tactically versatile fighting force. If CS, CSS, and mobility problems are solved, and the LI force is used in restricted terrain, the tactical advantages of cross-attaching heavy and light forces are tremendous.

Discussion

Doctrinal literature for both LI and regular infantry is undergoing change and there are several issues yet to be resolved. Following is a discussion of these infantry issues and our interpretation of how well the literature reviewed in this report promotes the understanding of LI doctrine, tactics, and techniques.

There is a movement within the infantry community toward a philosophy of "one" infantry which has begun to impact doctrine and training literature. Historically, the United States Army Infantry School (USAIS) has developed doctrine and training literature for eight variations of infantry including ranger, airborne, air assault, light, motorized, mechanized (M113), Bradley infantry fighting vehicle, and traditional infantry units. The rationale behind this approach was predicated on the fact that each type infantry unit was organized under tables of organization and equipment (TOEs) with differing numbers of soldiers and items of equipment and weaponry. However, a collective front-end analysis conducted by the staff of the USAIS in late 1987 reflected great commonality in individual, leader, and collective tasks across these units. As a result of these findings the Chief of Infantry made the decision to consolidate various soldiers manuals, mission training plans, and battle drills, in moving toward training one infantry. For example, during calendar year 1988, the number of soldiers manuals was scheduled to be reduced from 20 to eight, mission training plans from 56 to 11, and battle drill books from nine to three.

The ultimate goal of the one infantry efforts is to streamline infantry doctrine and training while imbedding FM 25-100 (1987), Training the Force, into commissioned and noncommissioned officers courses taught at USAIS. Consolidated doctrine and training literature from squad through brigade level was scheduled to be in place by mid-1989.

Current doctrine as stated will change. At this time, it is not possible to predict the specific impacts of this one infantry philosophy. The only certainty is that doctrinal literature will describe infantry tactics and doctrine in a more generic manner.

Earlier, we indicated that the presentation of LI doctrine through the examination of the FM 7-70 series of manuals might not be the optimal vehicle to communicate LI doctrine. The manuals provide doctrinal guidance for squad through battalion level LI units. Several aspects of this series of manuals lead to the conclusion that they are not as effective as they could be.

One of the most serious problems concerns the terminology used in the 7-70 series. The authors of the 7-70 series clearly state that techniques described in the manuals represent only one example of how to conduct particular tasks which together translate into successful operations and then successful missions. Nevertheless, techniques labeled with such names as seamless web defense, expanding torrent, and urban web (archipelago) create tremendous confusion. Most soldiers are not familiar with these terms and think the manuals are introducing something new. In reality, these names refer to actions that could be easily described by more familiar terms such as

infiltration, penetration, and turning movement. The net result is confusion, a failure to accept the manuals, and a failure to use the manuals in the field as much as they should be used.

This conclusion is supported by the Joint Readiness Training Center (JRTC) liaison officer (LNO), provided by the Combined Arms and Tactics Department (CATD) of USAIS, who works with JRTC and provides assistance to the USAIS by making observations concerning the status of doctrine, training, organization, and equipment for the light forces training at JRTC.

The JRTC LNO observed several battalion task forces that trained at JRTC in 1987-1988 and had extensive interface with JRTC observer/controllers, soldiers participating in the rotation, and other individuals integrally involved with training at JRTC. Several observations concerning the 7-70 series of manuals included "tactical language is weak and multiple terms are used indicating the same series of actions in maneuver manuals... [this is] further compounded by the technique words and words which are undefined in current tactical language" (Wells, 1987). "The FM 7-70 series of manuals are highly undesirable to the leadership at JRTC" (Wells, 1987). Wells also noted that terms such as seamless web and baited attack caused confusion (1988).

Further support is provided by a computerized data base compiled by the Directorate of Evaluation and Standardization (DOES) of USAIS. The Infantry Issues and Lessons Learned (I2L2) analysis system is a software package which consists of a collection of current infantry related observations and issues, along with a program to assist the user in accessing information. The program provides access to a historical record of observations and issues, involving a variety of Army exercises and events which have been researched by Fort Leavenworth and USAIS. One of the observations noted in I2L2 was "... terminology is confusing. Soldiers and junior NCOs do not understand when a platoon leader talks about baited attack, elastic defense, etc." (I2L2 Observation No. 117).

Another serious shortcoming of the 7-70 series is the lack of consideration of the battlefield operating systems (BOSs). The BOSs represent a comprehensive hierarchical listing of Army battlefield functions and the generic tasks inherent to those functions. The definitions of the BOSs are found in TRADOC Pamphlet 11-9, Blueprint of the Battlefield (1988). The BOSs have been adopted by the U.S. Army to structure unit training evaluation, doctrine development, and diagnostic evaluation of training developments. The seven BOSs include:

- Maneuver
- Fire Support
- Intelligence
- Mobility and Survivability
- Air Defense
- Combat Service Support
- Command and Control

The seven BOSs have been incorporated into squad through brigade level mission training plans (MTPs) as well as FM 25-100 (1987), Training the Force,

which is the capstone training document for corps and staffs down through the lowest echelon of command. Furthermore, feedback to units from the combat training centers (i.e., National Training Center (NTC) and JRTC) in the form of take-home packages is now structured around the seven BOSs.

Recently, we have received a draft copy of FM 7-20 (1988), The Infantry Battalion which is a part of the 7 series of field manuals which will replace the 7-70 series. There are several very important advantages of FM 7-20 (1987). First, FM 7-20 (1987) does not contain the terminology found in the 7-70 series that created the confusion described earlier. Second, it reflects the influence of the one infantry philosophy. Last, it does not reflect only a LI approach.

FM 7-20 (1987) is a good example of how fewer publications can serve to communicate doctrine to several types of units as opposed to separate publications for every type of infantry unit. The current trend is for field manuals to be written for either mounted or dismounted infantry operations. Operations that are of particular interest to LI units are covered in appendixes.

In addition, many of the doctrinal shortcomings identified by the JRTC LNO, such as sustained and continuous operations, limited visibility operations, sniper employment, and command and control techniques, are now addressed in the appendixes of FM 7-20 (1987). Even though many doctrinal improvements have apparently been made with the production of FM 7-20, the true test will be the reactions of soldiers and trainers who use this manual and continually test its usefulness in the field.

References

Department of the Army (1979). Military Operations on Urbanized Terrain (MOUT) (FM 90-10). Washington, DC.

Department of the Army (1982). The Infantry Rifle Company (Infantry, Airborne, Air Assault, Ranger) (FM 7-10). Washington, DC.

Department of the Army (1984). The Infantry Battalion (Infantry, Airborne, Air Assault) (FM 7-20). Washington, DC.

Department of the Army (1984). The Infantry Platoon and Squad (Infantry, Airborne, Air Assault, Ranger) (FM 7-8, C1). Washington, DC.

Department of the Army (1985). Operational Terms and Symbols (FM 101-5-1). Washington, DC.

Department of the Army (1986). Blueprint of the Battlefield (TRADOC Pam 11-9). Ft. Monroe, VA.

Department of the Army (1986). Light Infantry Platoon/Squad (FM 7-70). Washington, DC.

Department of the Army (1987). Air Assault Operations (FM 90-4). Washington, DC.

Department of the Army (1987). Light Infantry Battalion (FM 7-72). Washington, DC.

Department of the Army (1987). Light Infantry Company (FM 7-71). Washington, DC.

Department of the Army (1987). Operations (FM 100-5). Washington, DC.

Department of the Army (1987). Training the Force (FM 25-100). Washington, DC.

Department of the Army (1988). Armored and Mechanized Infantry Brigade (FM 71-3). Washington, DC.

I2L2 Observation No. 117. (1986). Infantry Liaison Team (ILT) Report, 2nd quarter, Fiscal Year 1986.

Wells, B. E. (1987). JRTC liaison officer (LNO) trip report - JRTC Rotation 88-1, Fort Chaffee, AR, 29 Nov - 15 Dec 87 - Information Paper. Fort Benning, GA: United States Army Infantry School (USAIS), Combined Arms and Tactics Division (CATD), Doctrine Division.

Wells, B. E. (1988). JRTC liaison officer (LNO) trip report - JRTC Rotation 88-1, Fort Chaffee, AR, 22 Jan - 1 Feb 88 - Information Paper. Fort Benning, GA: United States Army Infantry School (USAIS), Combined Arms and Tactics Division (CATD), Doctrine Division.